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"Efficiency, Concentration and Competition in the Brazilian Banking Sector: A Comparative Literature Analysis"

Mark Wolters
New University of Lisbon
Economics Faculty
Campus de Campolide
1099-032, Lisbon, Portugal
markedwardwolters@gmail.com
(Contact Author)

Eduardo Couto
Technical University of Lisbon
School of Economics and Management
Rua Miguel Lupi, 20
1249-078, Lisbon, Portugal
ecouto@iseg.utl.pt

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Abstract:

The past two decades have seen a revolution in the Latin American banking industry with a rash of crises, reforms, deregulation, privatizations, and foreign bank investment. The region has become a hot bed of interest in global financial markets. Brazil in particular has seen a significant change in its banking sectors competitive makeup with increases in foreign bank participation and lessening of public bank burden on the federal government. Competition, consolidation, and efficiency measures throughout the region have led to a reexamining of the costs and benefits of consolidated banking sectors and the threat of monopolistic actions of banks. Possible statistical analytical tools for efficiency, concentration, and competition are discussed, such as the Panzer Rosse H-Statistic, Frontier Analysis, and others. The quiet life theory of a monopoly is examined and put up against the efficient structure hypothesis of Demsetz in order to see which theory may hold more credence in the Brazilian banking sector upon further research. The paper finished with the analysis of the Brazilian banking sector and how developments can we do in future research to expand and fortify the previous findings about Brazilian banking sector.

Keywords: Banking Industry, Banking Competition; Banking Concentration, Banking Efficiency, Developments in Banking, Models in Developing Nations' Banking Sectors

1. Introduction

The past twenty years have seen a revolution and rejuvenation of the Latin American banking sector. The relatively recent deregulation of the banking industry across Latin America has sparked a marked increase in the rate of bank privatizations and foreign banks' investment throughout the region. Additionally, there has been increased competition among the surviving banks in an increasingly consolidated banking market. These occurrences are in addition to the numerous financial crises that were felt across Latin America and around the world over the past 20 years. All of these factors have helped in developing a unique and exciting framework of banking structures and dynamics throughout Latin America, with a noted effect on the level of banking cost efficiencies.

With this paper we hope to present an overview of the literature in a number of areas that influenced and helped morph the Latin American banking sector over the past two decades. Also, the paper will look at economic models used to measure market concentration in order to test for monopolies as well as monopolistic and perfect competition among the banking industries of Latin America, and what the possible effects on the banking industry might be. This then leads into a discussion on efficiencies and if the level of market concentration and competition has an effect on overall banking efficiency. Additionally, this paper will focus a large proportion of its discussion on the special case of Brazil's domestic banking industry and the effects on its levels of efficiency when taking into account competition and market concentration.

The paper is structured into a diverse array of topics that are needed to achieve an understanding of the current situation in Brazil's banking sector, as well as the economic theories that we hope to use in order to explain a relationship between market concentration, competition, historical factors, and banking efficiency in Brazil. The first section is used to explore the recent trends and occurrences in the Latin American banking sector in order to give an overall idea of the trends in the region. The second section looks at Brazil specifically and the effects that the Real Plan and subsequent government interventions had on the overall Brazilian banking industry. The third section looks at the influence of foreign banking institutions on the domestic banking industry of Brazil and other nations, and how these influences have helped form a more liquid and stable banking environment. The fourth section switches to looking at

different possible economic models and theories that researchers can use in order to test market concentration, levels of competition, and levels of efficiency, for example the Panzer-Rosse H-Stat (Panzer and Rosse 1987) as well as Demsetz (1973) efficient structure hypothesis. The fifth section looks more closely at monopolistic competition and the theory of the quiet life scenario for monopolies for highly concentrated industries, and the counter quiet life sentiments and ideals put forth by Demsetz (1973). The sixth section concludes the research part with a reflection on the most important topics discovered during the review and is then followed by a separate section containing ideas for future research that we intend to develop.

2. Recent Trends in the Latin American Banking Sector

The past two decades have seen a rash of changes throughout the Latin American banking industry. The changes have come in the forms of deregulation of state run banks, bank privatizations, restructuring of banking laws and systems, the opening of domestic banking markets to more foreign competition, and many other phenomenon.

The 1980's are termed by some economists as a "lost decade" for Latin America (Fraga 2004). This term comes about in perspective to the rapid growth seen throughout Latin America in the 1970's and to some extent in the rebound in Latin American economies through a great part of the 1990's. The World Bank's data on Per Capita Growth for the decades in discussion show a severe downturn in not only particular countries, but for the whole Latin American region in general. For example, Brazil's Per Capita Growth for the 1970's was a robust 5.9% on average for each year of the decade. This was then followed by a stalled economy for the entire 1980's with an average Per Capita Growth of -0.4%, literally a lost decade of nothing to show for it in terms of growth. This was then followed by a modest 1990's average Per Capita Growth of 1.3%. Latin America in general in a weighted average of economies of Growth Per Capita was, 3.8 for the 1970's, -0.6 for the 1980's, and a return to growth of 1.7% throughout the 1990's. This is in comparison to the United States Per Capita over the period (for a perspective) of 1.7% in the 1970's, 2.2% in the 1980's, and 2.0% in the 1990's (Fraga 2004).

Average Per Capita GDP Growth for the Period 1970-1999 on a Per Decade Basis (Fraga 2004)			
	1970's	1980's	1990's
Brazil	5.9%	-0.4%	1.3%
Latin America	3.8%	-0.6%	1.7%
United States	1.7%	2.2%	2.0%

This data shows that in general the entire Latin American market was in a financially lost decade that many felt needed to be dealt with (Tornell et al 2003, Fraga 2004).

Other indicators that showed some of the deepening need for reform throughout the region can be seen in the inflation rates. Argentina averaged a rate of over 437% for the 1980's while Brazil felt the sting of a 336% inflation rate through the 1980's. Overall the Latin American region had a weighted average inflation rate of approximately 223%, while the comparative U.S. consumer only felt a 4.7% increase in inflation (Fraga 2004).

These combined effects of negative growth and breakneck inflation affected all areas of the economies and this would include the banking sector. Governments knew that something needed to be done, and reform was the name of the game. Therefore there was the so called "Washington Consensus" (Williamson 1990, Fraga 2004) which recommended different types of reform on a country by country basis. However the general ideas put forth were: monetary and fiscal control on the part of the domestic governments, a more open foreign trade policy, sets of privatizations in certain government controlled companies and industries, as well as deregulation in other areas of the economy, including the banking sector (Williamson 1990, Fraga 2004).

Yildirim and Philippatos (2007) discuss the effects of reforms taken by many of the governments of the region during the last twenty years. Their findings narrow down the two main areas where the governmental reforms of their particular banking sectors have occurred. The first deals with the structure of the banking systems in terms of their legal makeup, authority, and powers. The second area of reforms was in the banking regulatory area where governmental agencies were restructured in order to assure more sound banking practices and regulation.

The reasons for these reforms are numerous, not of least of which were the financial crises that struck continually throughout the region over the past twenty years, some

examples (Lindgren et al., 1997, Beck 2005, Hunter 2006, Holland et al 2006, Yildirim and Philippatos 2007). As well as the Per Capita Growth stagnation and inflation throughout the preceding decade of the 1980's (Fraga 2004). According to Lindgren et al. (1997) the IMF reported that nearly nine out of ten Latin American countries faced serious financial or banking crisis during the period. Additionally there were crises outside of the region that affected the financial sector: Asian countries in 1997 and Russia in 1998 (De Paula and Alves 2003).

The ubiquitous nature of these crises shows an overall need of reform throughout the region. Many governments felt that a change was needed and that inefficient and underperforming banks needed to be taken from the market (Nakane and Weintraub 2005). The first round of much needed financial system reforms came about in the early nineties. The first group of countries Mexico, El Salvador, Bolivia, Venezuela, Chile (an exception since their major banking reform legislation was in 1986), Brazil, Ecuador, Honduras, Paraguay, and Peru started overhauling their banking system with significant changes in their banking laws and regulations (Yildirim and Philippatos, 2007). There were countries which did reform their banking systems, however not to the extent of the first group. These would include countries such as Columbia and Costa Rica. Then there were countries that only slightly altered their banking regulations include Argentina, Guatemala, and Uruguay (Yildirim and Philippatos, 2007). However, just because countries did follow through with structural changes it did not necessarily halt their financial problems, as can be seen in the cases of Mexico in 1994, Brazil in 1999, and Argentina in 2002 (Hallwood et al 2006, Hunter 2006).

Another factor leading to needed reforms is the increasing level of integration of Latin America into the global market. Globalization and new competition has put a strain on Latin American domestic banks in order for them to keep up with the vast new financial products that international institutions were offering. The free flow of trade and capital that follow along with globalization were a driving force in needed reforms in the domestic banking sector in order for the domestic banks to compete on a global scale against their foreign counterparts (Aguirre and Norton 2000). Further changes such as technological advancements improved banking regulation and competition at the international level and have also been seen as a driving force in reform in the Latin American banking sector (Yildrim and Philippatos 2007).

These numerous crises, pressures from globalization, and governmental reforms targeted at weeding out inefficient banks have led to a consolidation in the overall domestic banking sectors of Latin America. According to Yeyati and Micco (2003) there has been a decrease in the number of banks in the region ranging from 21% to 32% depending on country. We will focus more specifically on the change in the number of banks in Brazil in section two. This marked decrease in the number of banks in the market can be attributed more to the elimination of inefficient banks targeted by the government than to any market consolidation factors (Yildirim and Philippatos 2007).

Reform and consolidation has led to an inflow of foreign banks into the region and some credit their investment and long-term strategy outlook as a stabilizing force in the region's banking sector (Haselmann 2006). Additionally, many governments feel that the pain felt by domestic banks in the liberalization period is outweighed by the benefits of having a more open and international banking sector. Feeling this to be true many governments in developing and developed nations have opened up their banking sectors to more foreign-owned banks (Claessens et al. 2001).

3. The Real Plan and its Effects on the Makeup of the Brazilian Banking Sector

This section focuses on the specific case of Brazil and its recent history in the banking sector. The recent past has been marked by reform, new regulations, foreign investment, privatization, and increases in efficiency among banks.

The Real Plan was a major stabilization plan developed by the Brazilian government in order to reign in years of run away inflation and fiscal irresponsibility. The Real Plan used a semi-fixed exchange rate in conjunction with more open trade and investment policies. This led to a quasi-dollarization of the Brazilian Real. It was not a direct one to one dollarization as was in Argentina (Hallwood et al 2006). The Real Plan had some leeway in its exchange pattern as was seen after the Mexican crisis in 1994-1995 when the Brazilian government began to allow the Real to deflate little by little. This led to a full free float of the Real in 1999 after a period of intense speculative pressure on the currency (De Paula and Alves 2003).

The Real Plan had a striking and significant effect on inflation after its introduction in 1994, and continued to help control inflation even after the deflation of the Brazilian Real in January of 1999 (De Paula and Alves 2003). For example, according to the Brazilian government the inflation rate in 1994 was 2240.17 and by 1998 it had fallen to 4.85. In the year 2000 after the floating of the Brazilian Real inflation stayed at a respectable 8.03 even with the added pressure of the ending of the true semi-fixed exchange rate portion of the Real Plan in 1999.

In terms of the Brazilian banking sector, before the Real Plan banks made a profit from inflation transfers. Inflation "charges" are felt by non-interest bearing deposits and cash deposits. Since the banks are the issuers of the deposits they receive a part of the inflation charges or inflation tax. This tax was a significant percentage of Brazilian banks' profits. In the early 1990s inflation taxes for banks accounted for 3.4% of GDP (Nakane and Weintraub 2005). However after the instatement of the Real Plan and Brazil changing from a high inflation country to a low inflation country the inflation taxes as a percentage of GDP dropped to 0.03% in 1995 (De Paula and Alves 2003). If we take into account that the average yearly inflation rate was over 336% for the 1980's in Brazil we can see that this has been a long standing income generator for Brazilian banks (Fraga 2004). However, this dramatic drop in profit locations for banks led them to more risky loan agreements with clients that may or may not have been credit worthy before. This led in turn to more loan defaults and more bank bailouts by the federal government.

This period after the introduction of the Real plan is noted for additional measures taken by the Brazilian government in order to reign in some of the inefficient state banks within Brazil as well as inefficient and unsafe private banks. Beck et al. (2005) and Nakane and Weintraub (2005) take a specific look at the transformations in the Brazilian banking sector from before the Real Plan to after the deflation of the Brazilian Real, 1990-2002.

Before the Real Plan state-owned banks in Brazil, that would be the banks owned by the individual states within the country, i.e. Sao Paulo, Espirito Santo, Parana, etc, had a long history of financial difficulties. These difficulties led to the federal government bailing them out on numerous occasions. This in itself led to more problems and the government decided it needed to do something with their financially troubled state

banks (Beck et al 2005). The proposal for dealing with the state banks need for reform came about in 1996 with the PROES program (Program of Incentives to the Reduction of the State-Level Public Sector in the Bank Activity).

Within PROES a state bank had basically four choices. The first choice was liquidating the bank and go out of the market completely. Second, the bank could allow the federal government to take control and privatize or liquidate the bank. Third, the bank could privatize the bank themselves. Finally, the bank could be restructured and continue running as a state bank. There was another option which was turning the bank into a developmental agency (Beck et al 2005). Due to a long history of state governments using their state banks as patronage mechanisms it would seem that the state governments would prefer to restructure their banks and keep them under their control. However, in order to do that the state governments would have to cover at least half of the restructuring costs and institute full scale management change. These criteria set by the federal government were meant to force states' hands in the matter and make them privatize their banks. With that purpose in mind they were successful seen in that as of 2002 there were only 14 of the original 32 state banks remaining in operation from 1994.

The private sector banks were compelled into changing ownership structure and business style by the PROER program in 1995 (Program of Incentives to the Restructuring and Strengthening of the National Financial System). Under PROER weak, inefficient, or threatened banks had the option to either increase their capital, transfer its shareholder control or be merged with another bank. In order to facilitate the transition and sales of the weaker private banks the central bank enacted measures to make it easier for stronger banks to purchase their weaker competitors (Nakane and Weintraub 2005). The PROER program saw a dramatic decrease in the number of private domestic banks within Brazil, from 146 private domestic banks in 1994 to only 75 in 2002. This drop in real numbers of banks did not mean a drop in the share of the banking market by Brazilian domestic banks. In terms of share of deposits domestic private banks had a 38.85 share of the market in 1993 and a 37.16 share in 2002. Additionally, their share of the loan market increased from 31.55 in 1993 to 40.45. This increase is due in part to the extreme drop off in the share of the public sector banks, which fell from 61.88 of the loan market in 1993 to a mere 29.07 in 2002 (Nakane and Weintraub 2005)

In terms of foreign participation in the Brazilian market, the opening of the banking sector in correspondence with the Real Plan led to a large investment in international banks within Brazil. With the overall banking industry consolidated from 246 banks in 1994 to 155 in 2002, the number of foreign controlled banks rose from 37 to 56 in the same time period. Additionally, the share of the market of foreign banks in terms of net worth, assets, deposits, and share of the loan market increased at an amazing rate. The share of the net worth of the Brazilian banking sector controlled by foreign banks rose from 7.32 in 1993 to 33.62 in 2002, while the share of assets rose from 8.36 to 27.67, deposits from 4.84 to 20.13, and share of the loan market increased from 6.57 to 30.48 (Nakane and Weintraub 2005).

When looking at the overall picture of the banking market within Brazil we can see a marked decrease in the participation of state and government banks while a corresponding increase in foreign participation and an increase in the amount of concentration within in the domestic banking sector. This leads one to believe that the more inefficient banks are slowly and surely being run out of the market while the quicker and more agile banks have snatched up the left over customers.

4. The Influence of Foreign Banking Institutions on a Domestic Banking Industry

The reforms and globalization of the financial sectors in Brazil, and indeed all of Latin America, lead to a marked increase in foreign bank participation during the 90s (Yildirim and Philippatos 2007). According to Nakane and Weintraub (2005) from 1994 to 2002 Brazil saw an increase in the number of foreign owned banks of over 150% while the total number of banks in the country fell to 63% of their 1994 numbers. This contrast in the success of foreign banks versus the overall consolidation of the Brazilian banking market shows that the downfall of the state and federal banks in Brazil did not necessarily transfer to the foreign banks within Brazil.

The Brazilian example is a common occurrence across Latin America and the consolidation of the domestic banking sectors did not have a negative effect on the foreign banks numbers. The foreign banks may not have been as negatively affected by the downturn as the domestic banks since they were geared toward more long-term

strategies and they ran with better cost efficiencies than the domestic inefficient banks that went out of business (Nakane and Weintraub 2005, Levine 1996).

Some of the benefits enjoyed by the domestic banking client with the onset of foreign bank competition in the industry include an improved level of service, an increase in the number of financial products available to the domestic consumer and increased regulation that would allow for a more stable domestic banking environment (Levine 1996). Levine (1996) also points out that the simple presence of internationally respected banks help countries to be able to gain access to international capital, because the international banks add credibility to the domestic banking market.

Additionally, in terms of out of the pocket expenses the margins earned by the banks are reduced and this should be positive for the consumer (Claessens et al. 2001). These lower bank margins of the competitive banks would result in lower profits. Domestic banks are forced to become more cost efficient in order to stay competitive and profitable (Claessens et al. 2001).

The main negative for the domestic banks would be the increased costs in competing against a larger international bank with a stronger reputation than the domestic bank. The domestic consumer may lose out as well as international banks may not be as willing to offer riskier loans for smaller domestic customers. (Claessens et al 2001, Beck et al 2005). Additionally, domestic governments would have less say in the flow of money in the economy since international banks may not be as willing to accommodate to domestic politics.

Claessens et al's study (2001) found some interesting results when comparing foreign banks in developed versus developing nations. While in developing nations foreign/international banks have higher profits than domestic banks the opposite is true in developed nations. This would show that the structures used by international banks in developing nations to be more efficient and productive than their domestic developing nations' counterparts, while this did not hold true in developed nations. This may be due to a level of trust or entrenchment in the domestic developed banking sector that has already developed its own level of trust and reputation, thus cutting off one of the international banks' main selling cards, i.e. stable reputation.

In the overall Brazilian market the banks were not the only entities being privatized or deregulated. According to statistics between 1988 and 1999 over half of all privatizations in the world were taking place in Latin America and in Brazil over the same time period privatizations surpassed 10% of the GDP in 1999 (Fraga 2004). These privatizations in areas such as banking, telecommunications and the energy sector can be seen as a harbourer of more foreign direct investment, thus leading to further inflows of capital and a more stable banking and capital markets.

It is important to note why Brazil looks so attractive to foreign banks. In Alon's (2006) study on evaluating market size for service franchising in emerging markets it was noted that Brazil, Russia, and Mexico outranked China and India as the markets with the largest economies that would be accommodating to service franchising. With over 80% of the world's population living in emerging markets it is obvious to see why international banks are trying to make inroads into these countries. Alon notes that it is not only the population of a country that is important, but its GDP per capita, purchasing power parity, and urbanization. These factors taken together lead to a positive view of franchising within Brazil because it is highly urbanized (80%) and with a purchasing power parity that is twice that of China's and three times that of India's (Alon 2006).

5. Competition and Consolidation and their Effects on Efficiency in the Banking Industry

Competition in any industry is seen as a positive phenomenon, including the banking industries of Latin America. However, market concentration in developing nations is seem to have a negative effect on banking efficiency (Demirguc et al 2004). Additionally, many governments have been liberalizing their banking sectors in order to make them as competitive as possible and gain the benefits of perfect competition (Maudos and Guevara 2007). This is due to the theory that bank managers with market power have less incentive to deal with their inefficiencies and the cost of these inefficiencies are passed on to the bank customers.

This would be in contrast to Demsetz' (1973) theory that states that market concentration is not necessarily a bad thing. It also states that it does not have to lead to

the worst parts of monopolistic behaviour, such as false scarcity and higher consumer prices. The Demsetz' (1973) work is interesting because it shows that this mindset of how a competitive firm builds its mini-monopoly by being the best firm out there rings true. In Brazil the banking industry is constantly innovating and trying to keep up with the competition and this constant innovation may be leading to a more concentrated market by forcing out weaker competition. This would then give the appearance of a monopoly or oligopoly. However, Demsetz' (1973) and Panzer-Rosse (1987) model's and theories could be used to evaluate the efficiency gains and competition/consolidation aspects of the Brazilian banking industry.

We will develop more the Demsetz' (1973) perception of industry structure and market rivalry. Demsetz looks at concentration of a market in terms of competitive pressures. These pressures are used by some firms to institute change and become more efficient and productive. They use this efficiency advantage to develop better more affordable products and with that advantage the firm gains more and more market share. This then forces out weaker competitors or takes away some market share of others. Demsetz states that an industry with a few firms can come about only from superior production or marketing skills or the market is only able to sustain a few competitors. This would then indicate that few firm industries do not necessarily mean there is a monopoly or oligopoly structure per se, as in terms of the negatives of monopolies or oligopoly collusion.

According to Demsetz it may indeed be that the firm in control of the market or the few firms in control have superior competitive performance and thus they earn their market share by being the best in the market. This may take the shape of goodwill or a good reputation in the community or in the form of higher productivity in the specific knowledge that employees of the firms have (Demsetz 1973). Demsetz feels that profit may not come about in such "monopoly" like situations due to artificially created scarcity in the market, but by uncertainty, a bit of luck and efficient use of resources. This theory is termed the efficient structure hypothesis (Maudos and Guevara 2007).

On the other hand, there are times when concentrated firms do act in collusion. However this will not be discussed here. We will be discussing how Demsetz points out how inefficiencies can come about by anti-concentration public policy. Demsetz brings up a concern that government intervention in consolidated markets may lead to more

inefficiencies than efficiencies, and thus the policy would be counterproductive. In his discussion he points out that firms that are better at serving a consumer base will tend to grow faster than other competing firms. They could then take advantage of scale economies and become mega companies controlling the whole market. However this is not seen as there are very few monopoly industries these days. Additionally in contrast to the monopoly/colluding oligopoly perspective of market concentration, the competitive view of swift alterations in market concentration levels, i.e. many companies moving in or out of the market, come about by the changing cost conditions as opposed to some sort of artificial barriers set up by the monopolists or oligopolists (Demsetz 1973). These base cost changes would vary across firms and thus would weed out the firms less likely to compete at these new competitive cost levels. Hence, the notion of the survival of the fittest.

Some governments do see strong near monopoly companies or possible collusion as threats and develop policies to promote competition within the industry. In Demsetz research he came up with a model in order to test for a relationship between market concentration and relative rates of return that would shed light on whether an industry was indeed colluding. He felt that the monopolistic viewpoint would see that the difference between the rates of returns of large and small firms would not increase or decrease, as they would be working together to maintain the status quo. He did not find this. Moreover, he found that rapid changes in concentration in the market are brought about by changes in costs and not due to entry barriers set up as would be expected in collusion (Demsetz 1973).

In terms of statistical testing of market concentration and competition the Panzer-Rosse H-Statistic (Panzer-Rosse 1987) has been used extensively. In their study Yildririm and Philippatos (2007) use a PR test in order to test for levels of competition and market concentration within Latin American countries' banking sectors. Their findings show that no countries in Latin America have monopolies or perfect competition. They state that according to their research results the banks in these countries earn their profits and revenues as if they are in monopolistic competition. Therefore, they surmise that the highly concentrated banking markets in the region do not lead to anti-competitive conduct among the banks. Additionally, while following up on their original research they found that market concentration does not necessarily lead to a lower level of competition in the market or higher bank performances. Furthermore, domestic bank

performance was shown to be negatively affected by competition and foreign bank participation.

In their H statistic studies Yildirim and Philippatos (2007) broke the time period 1993-1999 into two groups (1993-1996 and 1997-1999) in order to study any variations in the concentration of the individual banking sectors over time. Their results for Brazil showed a decrease in competition over the two time periods from a PR H statistic of 0.80 to 0.71. In the PR H statistic in this case the index is a bipolar model, where one equals perfect competition and zero represents a monopoly situation. This drop in the H Statistic would show that with the drop in the numbers of banks (Nakane and Weintraub 2005) there has been a corresponding drop in competition, which would seem obvious. Additionally, the H-Statistic results throughout some Latin American countries varied from the 1993-1996 group to 1997-1999. For example, Brazil, Chile and Venezuela showed marked decreases in their H-Statistics which would represent a decrease in competition in the banking market, while Argentina, Peru, Paraguay, and Uruguay showed marked increases in their H-Statistics over the same period thus a increasing of competition (Yildirim and Philippatos 2007). This helps to emphasize that though many of the Latin American countries' banking sectors are going through changes and reforms the effects are different on a case by case basis and thus worth examining closer.

On a more explanatory note, the Panzer-Rosse H Statistic is a general test for monopoly (Panzer, Rosse 1987). While investigating newspapers Rosse noticed something interesting. Newspapers tend to be local monopolies but the reduced form revenue equations kept showing coefficients that were not consistent to monopolies. Therefore, Panzer and Rosse (1987) came up with a few ideas of how to test for monopolies on their own. They used comparative statistics in order to test theories against each other. In terms of monopolistic competition versus monopoly they tested individual companies and then tested the market equilibrium in order to compare them to each other. The comparisons would show them the differences between the two. This is due to the theory that each firm would act as a monopoly regardless if they were in a monopoly or in monopolistic competition.

Mkrtchyan (2005) used the Panzer-Rosse H statistic in his study of banking competition in emerging markets. He termed it that the PR test measures the competitive nature of a

market and the market power of the firms within said market. Moreover, the predictive movement of price changes to a cost change are different depending on if a firm has a monopoly. The H statistic is derived from a "reduced form revenue equation and measure of the sum of elasticities of total revenue of the bank with respect to bank input prices" (Mkrtchyan 2005, p. 69). As stated above, the H function is a function of demand elasticity where if the H stat equals to one we have perfect competition and if it is equal to zero there is a monopoly. All points in between zero and one represent monopolistic competition. Also, many other studies use the Panzer-Rosse H statistics in their studies on concentration and competition in the banking industry (Yetati and Micco 2003, Mkrtchyan 2005, Nakane and Weintraub 2005, Belaisch 2003, Claessens and Leaven 2004). This is why we feel it is important to discuss the Panzer-Rosse H statistic in order to compare to previous and other relevant studies.

6. Market Power and Efficiency

The relationship between market power and efficiency can be explained in numerous ways, but the three main hypotheses discussed in Maudos and Guevara (2007) and other articles can be summarized as follows.

- Structure-conduct-performance: This is the collusion hypothesis. Here the theory is that higher profits are brought about by collusion among the industry players. Therefore in this perspective the more concentrated a market becomes the easier it is to collude and gain extra profit from the collusion (Bain 1956).

- Demsetz' efficient structure hypothesis (see above): here the efficient banks and industries gain profits and market share due to their superior efficiencies. Thus the market consolidates as less efficient companies are forced out or lose market share to the efficiently superior companies (Demsetz 1973).

- Relative market power hypothesis: The hypothesis states that market share and efficiency can be used to explain the variance in performance of a firm. Additionally, individual market share of a company is used as a proxy variable for assessing market power (Shepherd 1982). Quiet Life scenario which is

discussed in depth in section 5.1 is considered a part of the relative market power hypothesis.

Taking into account the movements of concentration levels throughout Latin America as stated above using the Panzer-Rosse H-Statistic that showed decreasing, increasing and maintained levels of concentration (Yildirim and Philippatos 2007), it is of note that studies done during the same time noting the concentration changes had not affected the competitive practices within the region (Yeyati and Micco 2003). Additional studies on the level of competition in Brazil and other Latin American nations after the large scale concentrations of the markets showed that there was little or no decline in competition for the period of 1994-1999 (Gelos and Roldos 2004). Thus, these non-affected competitive practices even with the increased concentration would suggest a leaning toward the Demsetz' efficient structure hypothesis.

However, a further investigation into the worthiness of Panzer Rosse H-Statistic for testing for market concentration as a true representation for market power (Berger and Hannan 1998) would be important as it would then call for another measure to be used in order to gauge competition to have more robust results in terms of competition. This other measure or measures could then be used in addition to the Panzer Rosse H-Statistic in order to test multiple theories and angles of the efficiency/competition/concentration triangle in the banking industry (Berger et al 2004, Claessens and Laeven 2004).

An additional noteworthy point that has come up in a few articles on banking competition and concentration (Bos and Kolari 2005, Baleisch 2003) point out that in developing markets like Brazil that the large banks tend to work in more efficient and competitive ways, while smaller banks are seen to sometimes work in a more monopolistic way. One possible explanation as to why they may have their own small mini monopoly is due to the limited bank networks in less populated areas in some developing nations.

In terms of measuring efficiency and as such competition we have other measures that need to be discussed. Data Envelope Analysis (DEA) has been used to measure inefficiencies and efficiencies in different industries. They were especially useful when dealing with group data, such as bank branches (Bos and Kolari 2005, Halkos and

Salamouris 2004, Camanho and Dyson 2006). DEA develops a set of indices that can be used to compare a wide range of factors within multiple groups. This would be used in order to compare different groups of banks within the Brazilian market, theoretically wealthier states' banks (Sao Paulo versus poorer states' banks, i.e. Alagoas), so as to help control for possible local monopolies in smaller markets.

Frontier analysis is another noteworthy tool that can be used in order to determine efficiency gains. The frontier function approach bases efficiency frontiers of companies or industries at a maximum realistic output that a bank or financial institution can achieve with their current levels of input and technology (Shanmugam and Das 2004).

Finally, other possible additions to the analysis of efficiency and competition that may better explain the effects and produce better interpretive thoughts of the results is a Lerner index of competition. Maudos and Guevara (2007) point out that (as stated above) that the Panzer Rosse and other concentration models may not be the best form of defining market competition and thus a different method should be used. They stated that the Lerner index could be used as the researcher would be able to have market power be represented at a bank level as opposed to an industry level, thus giving more defined results.

7. The Quiet Life Scenario: Is it Applicable to all Situations?

"The best of all monopoly profits is a quiet life." – Hicks (1935, p. 8)

This quote from Hicks has been used constantly throughout economic literature to represent what some would say would be the worst part of monopoly action, and that would be inaction. The quiet life would symbolize when a company has more extreme market power, the lower the effort of managers and directors to eliminate inefficiencies. This may come about in the form of pricing above marginal costs, thus relaxing the need to reign in these inefficiencies. Therefore there would be a negative correlation between market power and efficiency (Maudos and Guevara 2007, Berger and Hannan 1998).

Berger and Hannan (1998) tested the quiet life hypothesis in concentrated and non-concentrated banking sectors and their results came up with a few noteworthy

observations. As stated above with the marginal costs, managers may not have the same pressure to lower their costs and inefficiencies. Additionally, the concentrated market may allow managers to follow non-profit maximizing goals. This could be in the form of pet projects or other non-core business activities. Also, in concentrated markets or non-competitive markets, managers may spend their time and energies at maintaining the market power of the company at the expense of controlling inefficiencies. Finally, and maybe the worst effect of the quiet life, inefficient and incompetent managers are not held accountable for their incompetence since their weak performance is hidden by the artificial margins. Thus they are allowed to stay in their positions continually hurting the company's profitability.

When taking Demsetz (1973) point of view it would seem that this is not always necessarily the case. According to Yildirim and Philippatos' (2007) research, Brazil is termed in monopolistic competition. And over their two testing periods, 1992-1996 and 1997-1999, Brazil seemed to move slightly more toward the monopoly side of the PR test, though still significantly more on the pure competition side (from 0.81 to 0.70). Monopolistic competition does have many of the hallmarks of monopolies, and many firms in monopolistic competition act in a monopolistic fashion (Panzer and Rosse 1987). However, in terms of the development of efficiency in the Brazilian banking sector Beck et al (2005) and Nakane and Weintraub's (2005) research both pointed to an increase in efficiency and productivity in the same time frame. This may largely be due to the elimination of many inefficient state, private, and federal banks in the Brazilian banking sector over the time period. However, these two almost contradictory findings lead us to believe there is more to be studied in this area in order to fully understand the market efficiencies, market concentration, and overall outlook of the Brazilian banking sector.

8. Conclusions

The past twenty years have seen an astounding amount of reform and deregulation throughout the Latin American banking sector and especially Brazil. The period has been noted with crises, reforms, new currencies, foreign investment, and relatively stable financial systems. Brazil in particular has seen a complete overhaul of its banking

sector and has used its history of inflation and knowledge gained throughout the period to turn itself into an example of banking innovation in Latin America.

The influence of foreign bank investment in the region has also played a large role in the reforms and development of the Latin American banking sector over the past two decades. The calming force that the international banks performed on the domestic market helped to stabilize soft markets and usher in reforms and a certain level of respectability for some regional banking sectors. They have also been instrumental in furthering innovation, product offerings, and cost efficiency improvements in the domestic banking sectors as well.

Through various statistical methods, especially the Panzer-Rosse test, many studies have shown that the Latin American banking sector including Brazil can be represented as monopolistic competition. Though there are tendencies to see the sector as almost an oligarchy the data does not support this thinking (Yildirim and Philippatos 2007).

Market power and efficiency relationships have been grouped into three main hypotheses. First is the structure-conduct-performance (SPC) or collusion hypothesis. Here greater profits are derived by collusion activities (Bain 1956). The second is the efficient structure hypothesis which states that efficient banks derive higher profits and higher market share as a reward for the more efficient use of resources (Demsetz 1973). The third is the relative market power hypothesis which hypothesis that the variance in a firm's performance is due to its efficiency and by the residual influence of market share (Shepherd 1982).

In a true monopolistic economy Hicks (1935) predicts a "Quiet Life" for the monopoly as its best and easiest course of action. This would mean that the monopoly sits back and enjoys its position while it lets innovation and new opportunities pass them by. This would not be the case in Brazil, where innovation and continued cost efficiency improvements have been developing in monopolistic competition. Demsetz' (1973) efficient structure hypothesis may be what is at work in Brazil and needs further research in order to make a valid claim one way or another.

9. Future Research

During the research for this article we took note that many of the bank studies whether done on banking in:

- Australia: years 1995-2002 (Kirkwood and Nahm 2006),
- Austria: years 1995-2002 (Hahn 2007),
- Brazil (Beck et al 2005),
- Czech Republic: years 1990-1999 (Matousek and Taci 2004),
- European Union: years 1988-1999 (Espitia-Escuaer and Garcia-Cebrian 2004),
- Greece: years 1997-1999 (Halkos and Salamouris 2004),
- India: years 1992-1999 (Shanmugam and Das 2004),
- Korea: years 1992-2002 (Park and Weber 2006),
- Latin America: years 1970-2000 (Fraga 2004, Yeyati and Micco 2007),
- Turkey: years 1990-2000 (El Gamal and Inanoglu 2005).

All seemed to be done for periods leading up to 2002, but there afterwards there are few new tests run for the period from 2002 to the present 2008. Therefore, it would seem logical in this fast changing age where the BRIC economies (Brazil, Russia, India, and China) are becoming more and more integral to the world economy that more up-to-date studies being made in order to test their market changes. This would include new Panzer-Rosse H-Statistical analysis in order to see how the Brazilian banking market has concentrated over the recent boom period, post 2002. Additionally, this would allow us to use other efficiency measures like the Lerner indices of market power, frontier analysis, data envelopment analysis, or other models in order to compare published historical figures from before 2002 (Beck 2005, Belaisch 2003) to the present day. This analysis would then allow us to track and theorize the developmental process of the Brazilian banking system over the recent past in terms of market concentration, efficiencies development, market competition levels, and other developments that may be noted along the research pathway.

Having analyzed the recent past and determining successful and non-successful developments within the market, we hope to come up with recommendations for other banking sectors around the world in order for them to take advantage of the developments that have occurred in Brazil over the past decade. Whether they are advice in order to help or advice in terms of policies and problems to avoid.

Note to Reader

This working paper is being shared in order to obtain ideas and critiques that will help to expand this paper into a more defined and relevant paper focusing on the Brazilian banking sector. We would appreciate any comments or critiques you find with this paper or the ideas presented here. Any advice will be greatly appreciated and the tougher the advice and comments the more we will appreciate it. Thank you for your time.

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